

A Method for Overlay Metrology of Low Contrast Features

Abstract

5 A wavefront sensing tool, such as a Shack-Hartmann detector, detects alignment features in a semiconductor wafer that might otherwise be undetectable using conventional optical tools, such as microscope. This is particularly advantageous for alignment features formed in photoresist with a height that is less than one fourth the illuminating light's wavelength. The wavefront sensing tool can be
10 used in conjunction with conventional optical tools and a composite alignment image can be formed from the two tools. For higher sensitivity, the light reflected off the wafer can be magnified, with e.g. a telescopic lens, prior to impinging upon the wavefront sensing tool. The composite image can be generated by one or both the tools or by a computer coupled to the tools.